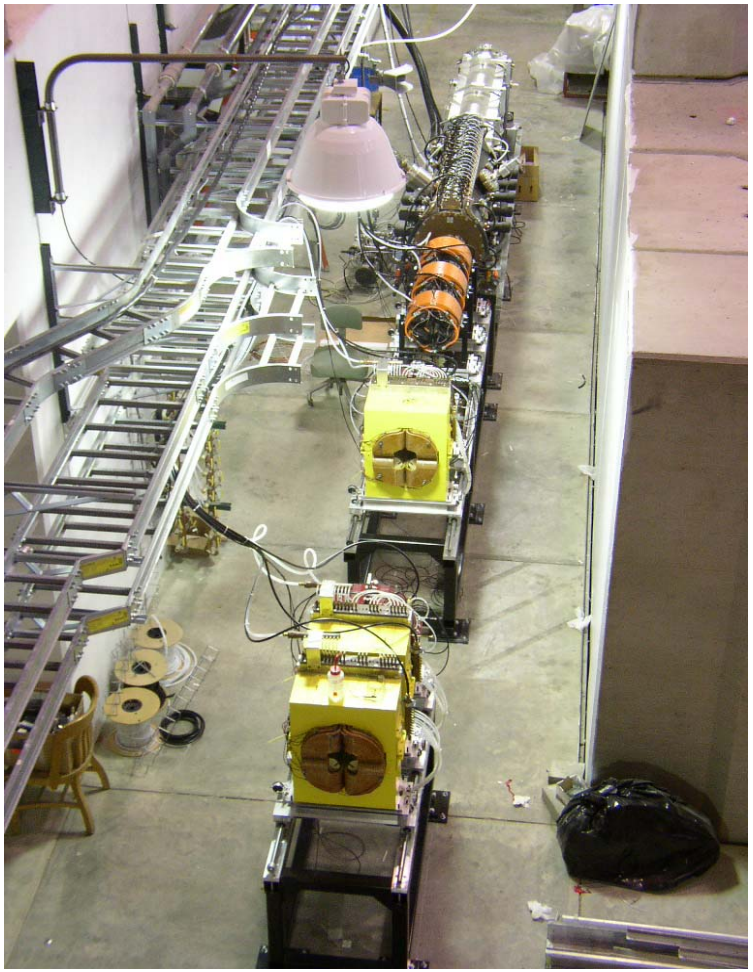
Development of a Low Energy Neutron Source

John M. Cameron, Indiana University, DMR-0220560

Construction of a novel neutron source has been underway at Indiana University since the fall of 2003. This source will be used for materials research, development of novel types of neutron instrumentation, and education of new users. Initial neutron production is scheduled for early 2005. The figure shows the accelerator and optical components of the proton beam line in place in Sept. 2004.



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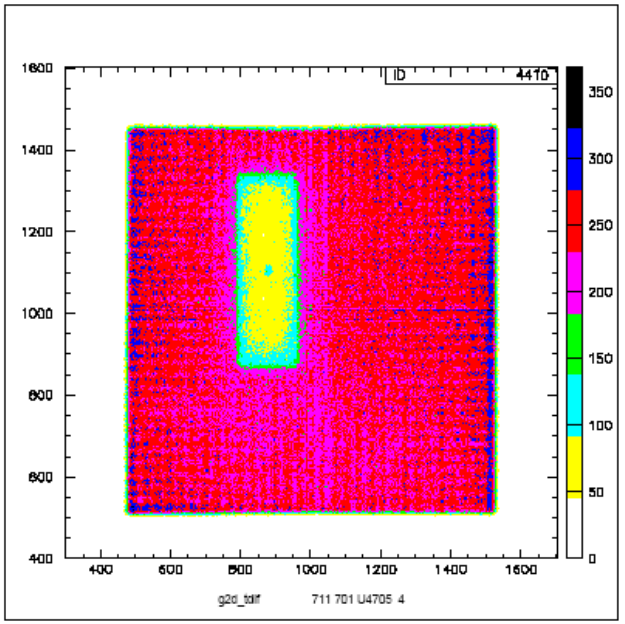
Major components of the LENS Small Angle Neutron Scattering (SANS) instrument are now in place. Shown are the detector vacuum can (2m in diameter) and test shadow image of a 1-cm hole in a Cd foil using the 2-D area detector (position resolution better than 10mm) .



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Education:

Four undergraduates (Jon Slater, Tom Dusilis, Collin McClelland, and Ethan Triplett), **seven** graduate students (Pei-Pei Chen, Jason Hartfield, Peter Jiang, Chris Lavelle, Nick Remmes, Giovanna Selvaggi, and Yun Shin) and **one** postdoc (Alexander Bogdanov) contributed to this work. Activity from this construction project has already introduced a new experiment to a teaching lab in the IU Physics Dept. LENS will have a significant impact on education in Physics, Chemistry, and Nuclear Engineering at IU and nearby universities over the next decade.

Outreach:

We sponsored the first in a series of workshops bringing people together from across the science and science education departments at IU to discuss coordination of outreach activities on this campus. We have also engaged in collaborative research with engineers at Cummins engine looking at soot buildup in engine filters.